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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/781,888

02/20/2004

Hsin Fen Hsu

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7590 02/27/2007
BRUCE H. TROXELL
SUITE 1404
5205 LEESBURG PIKE
FALLS CHURCH, VA 22011

EXAMINER

INGHAM, JOHN C

ART UNIT

PAPER NUMBER

2814

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/781,888

Applicant(s)

HSU, HSIN FEN

Examiner

John C. Ingham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-5,8,10,12,14,17,19,23,25,30,32,33,36,38,44 and 45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 3,32 and 44 is/are allowed.
- 6) ☒ Claim(s) 2,4,5,8,10,12,14,19,23,25,30,36 and 38 is/are rejected.
- 7) ☒ Claim(s) 33 and 45 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment to the specification filed 1 September 2006 has been entered and the objections withdrawn.
2. The amendments to the claims filed 1 September 2006 have been entered and the 35 USC §112 rejection of claims 1-44 has been withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims **2 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins and Wu (6,031,856).
5. With regards to claim 2, Collins et al. discloses a heat conductivity and brightness enhancing structure (Fig. 1-4) for light-emitting diode comprising: a bracket (see Fig. 4) having a cathode leg support (12), a bowl (14) formed in an upper end of the cathode leg support; a light-emitting chip (11) located in the bowl; and at least one depression (16) formed in a bottommost section of the bowl and receiving an adhesive therein (col 2 ln 15-16), the depression having an opening directed to the chip, the opening having a diameter or area smaller than a bottom face of the chip (see Fig. 2).

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Collins does not specify that the adhesive fills the at least one depression and adheres the chip in the bowl.

Wu teaches filling of a depression with an adhesive to eliminate the tilt angle of a light emitter (abstract) by placing the emitter on the top surface of the header (corresponding to the mounting location of the structure disclosed by Collin). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the teachings of Wu on the structure of Collins and fill the depression with adhesive in order to eliminate any tilt angle of the light-emitting diode.

6. Regarding claim 5, Collins et al. discloses the structure of claim 2, wherein the bowl (14) has a recessed face having one step (step from surface of 12 to surface on which the chip 11 rests).

7. Claims 4, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins and Wu as applied to claim 2 above, and further in view of Suzuki. Collins and Wu do not specify that the circumference of the depression of the bowl is formed with concentric recesses or has at least two steps.

Suzuki teaches in figure 4 the practice of using layers of recesses to control the directional range of transmitted light. Specifically, there is a first recess 24 (one step), a surrounding flat ring 24a (second step), a slanted recess 24b, and a final flat top surface 20a (third step). Adding and modifying the widths and depths of the recesses can easily change the range of directions in which the emitted light is shone (col 8 ln 1-7). It would have been obvious to one of ordinary skill in the art at the time of the invention to

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combine the structure of Collins and Wu with the teachings of Suzuki in order to change the range of directions in which the light is emitted.

8. Claims **12, 14, 17, 19, 23, 25 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins and Wu as applied to claims 2 and 4 above, and further in view of Yu.

9. With regards to claims **12 and 14** Collins and Wu does not disclose wherein at least one of the cathode leg support and anode leg support of the bracket is formed with heat-radiating wings.

Yu teaches a structure in figure 13 that contains heat-radiating metal wings (Yu col 4 ln 19-20, exposed parts of plate 52 and pins 5 in figure 13) in the cathode leg support (61) in order to improve dissipation of heat (col 4 ln 26-29). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the structure of Collins and Wu with the teaching of Yu in order to dissipate heat.

10. Regarding claims **17 and 19**, Collins and Wu do not disclose wherein the bottom face of the bracket is entirely attached to a conductive metal film of a PC board.

Yu teaches a structure embodiment in figure 11 that contains a solid conductive metal heat sink (6) beneath the bowl (623) in the cathode leg support (61). The bottom face of this bracket (heat sink) can entirely contact the circuit board (10) to dissipate heat (col 4 ln 29). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the structure of Collins and Wu with the teaching of Yu to dissipate heat.

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11. Regarding claims **23, 25 and 30**, Collins and Wu does not disclose wherein a column blind hole is formed in the cathode leg support from a portion below at least one depression of the bowl by a certain thickness to outer side of the leg support.

Yu teaches a structure embodiment in figure 14 that contains a hollow column blind hole (hollow section in item 6) beneath the bowl (623) in the cathode leg support (61), increasing the exposed surface area of a conductor (col 3 ln 34-36) and improving heat dissipation (col 4 ln 31-35). The resultant structure has a blind hole below the depression of the bowl, extending to the outer side of the leg support. The extreme bottom face of the blind hole contacts the PC board, while the inside bottom face of the hole is left suspended (partial attachment). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the structure of Collins and Wu with the teaching of Yu in order to dissipate heat.

12. Claims **36 and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins and Wu as applied to claims 2 and 4 above, and further in view of Wang. Collins and Wu do not specify wherein at least two fixing posts are disposed under the bottom face of the bracket for insertion in the PC board.

Wang teaches a structure for securely mounting diodes in figures 6-8, with at least a pair of fixation pins (13) integrally extended downwards from the bracket (10) for insertion into the PC board (30) in order to securely position the structure (Wang col 1 ln 66 to col 2 ln 3). It would have been obvious to one of ordinary skill in the art at the time

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of the invention to combine the structure of Collins and Wu with the teaching of Wang in order to securely position the structure.

Allowable Subject Matter

13. Claims **33 and 45** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. Claims **3, 32 and 44** are allowed.

15. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or suggest the structure as claimed wherein the bottom face of the bracket is formed with columns which have column holes and are passed through the PC board, or wherein a column hole is formed through cathode leg support from the depression of the bowl to an outer side of the bracket.

Response to Arguments

16. Applicant's arguments filed 1 September 2006 have been fully considered but they are not persuasive.

17. Regarding the argument on page 10 that "there is no suggestion in Suzuki of the bowl has a recessed face having at least two steps", Suzuki Fig 4 shows a first recess 24 (one step), a surrounding flat ring 24a (second step), a slanted recess 24b, and a final flat top surface 20a (third step).

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18. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, each reference has motivation to alter the basic structure of Collins. Wu teaches filling of a depression with an adhesive to eliminate the tilt angle of a light emitter by placing the emitter on the top surface of the header. Suzuki teaches that adding and modifying the widths and depths of recesses can easily change the range of directions in which the emitted light is shone. Yu teaches that heat-radiating metal wings, solid conductive bodies, and conductive bodies with blind holes in the cathode leg support improve dissipation of heat. Wang teaches a structure for securely mounting diodes.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Ingham whose telephone number is (571) 272-8793. The examiner can normally be reached on M-F, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HOWARD WEISS
PRIMARY EXAMINER

John C Ingham
Examiner 2814

JCI